

Claim Amendments

1. (Previously amended) A method of training a data reader operator, wherein the operator passes an item through the read volume of a data reader, comprising the steps of:

reading a symbol on the item to obtain symbol data and item identification data;

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monitoring reading technique to obtain read technique data;
sending the item identification data and the read technique data to an evaluation system;

obtaining optimum read technique data;

comparing the read technique data to the optimum read technique data to determine an effectiveness of the reading technique;

providing feedback indicating the effectiveness of the reading technique.

2. (Original) A method according to claim 1 wherein the data reader includes a plurality of windows through which the symbol may be read, wherein the step of monitoring reading technique comprises determining through which window the symbol data was obtained.

3. (Original) A method according to claim 1 wherein the data reader is a scanner that produces a plurality of scan lines to read the symbol data, wherein the step of monitoring reading technique comprises determining which scan line was used to read the symbol data.

4. (Original) A method according to claim 1 wherein the step of monitoring reading technique comprises determining a distance from the data reader to the symbol when the symbol data was obtained.

5. (Original) A method according to claim 1 wherein the step of monitoring reading technique comprises determining a length of time that the symbol was present in the read volume before the symbol was successfully read.

6. (Original) A method according to claim 1 further comprising the step of assembling a plurality of data pieces to obtain the symbol data, wherein the step of monitoring reading technique comprises determining how many data pieces were assembled to obtain the symbol data.

7. (Original) A method according to claim 1 further comprising the step of determining whether an EAS tag on the item has been deactivated.

8. (Original) A method according to claim 1 wherein the evaluation system comprises a PC-based training system.

9. (Original) A method according to claim 1 wherein the evaluation system comprises a POS terminal.

10. (Original) A method according to claim 1 wherein the step of providing feedback comprises displaying feedback data on a training system monitor.

11. (Original) A method according to claim 1 wherein the step of providing feedback comprises broadcasting an audio message.

12. (Original) A method according to claim 1 wherein the step of providing feedback comprises displaying feedback data in graphical form via a visual feedback indicator.

13. (Original) A method according to claim 1 further comprising the step of recording the read technique data for subsequent analysis.

14. (Previously amended) A method according to claim 1 wherein the step of obtaining optimum read technique data comprises accessing a lookup table containing predetermined optimum read technique data for an item corresponding to the symbol data.

15. (Original) A method according to claim 1 wherein the step of monitoring reading technique comprises detecting reading motion of the item via a plurality of triangulating cameras.

16. (Original) A method of scanning wherein an operator passes an item through the scan volume of a scanner while moving the item across a weigh scale integrated with the scanner, comprising the steps of

scanning a symbol on the item to obtain symbol data;

obtaining a dynamic weight of the item as the item is moved across the weigh scale;

obtaining optimum dynamic weight data for the item from a lookup table containing item weight data corresponding to the symbol data;

comparing the dynamic weight of the item to the optimum dynamic weight data to determine an extent of lifting performed by the operator;

providing data regarding the extent of lifting to at least one of a training system and a monitoring system.

17. (Previously amended) A method according to claim 16 further comprising the steps of scanning a plurality of items and calculating an average dynamic weight of the plurality of items.

18. (Previously amended) A method according to claim 17 further comprising the step of comparing the average dynamic weight of the plurality of items to a predetermined average dynamic weight standard.

19. (Original) A method according to claim 16 further comprising the step of monitoring scanning technique with the scanner to obtain scan technique data.

20. (Original) A method according to claim 16 further comprising the steps of:

producing a weight pulse having a duration equal to a length of time that the item is present on the weigh scale; and
determining a scan point within the weight pulse at which the item was scanned.

21. (Original) A method according to claim 20 further comprising the step of determining whether rescanning of the item has occurred based on the position of the scan point within the weight pulse.

22. (Original) A method according to claim 20 further comprising the step of determining a rate at which the item is moved through the scan volume based on the duration of the weight pulse.

23. (Original) A method of training a scanner operator to use proper scanning technique, comprising the steps of providing a pre-selected group of items having symbols encoded with symbol data;

scanning the symbols one at a time;

monitoring scanning technique to obtain scan technique data;

sending the scan technique data to a scanning evaluation system;

obtaining optimum scan technique data corresponding to the symbol data;

comparing the scan technique data to the optimum scan technique data to determine an effectiveness of the scanning technique;

providing feedback data indicating the effectiveness of the scanning technique.

24. (Original) A method according to claim 23 further comprising the step of moving an item across a weigh scale during scanning, wherein the step of monitoring scanning

technique comprises obtaining a dynamic weight of the item as the item is moved across the weigh scale.

25. (Original) A method according to claim 24 wherein the optimum scan technique data includes optimum dynamic weight data for the item.

26. (Original) A method according to claim 23 wherein the step of providing feedback comprises displaying the feedback data via a multimedia PC-based application.

27. (Original) A method according to claim 23 further comprising the step of recording the scan technique data.

28. (Original) A method according to claim 23 further comprising the step of sending the scan technique data simultaneously with item identification data to the scanning evaluation system.

29. (Original) A method according to claim 23 further comprising the step of determining whether an EAS tag on an item has been deactivated to determine an effectiveness of the scanning technique.

30. (Original) A data reading system for reading symbols on items scanned by an operator, comprising
a housing;

a data reader disposed in the housing for reading a symbol on an item, and for obtaining symbol orientation data and symbol movement data during operator scanning;

a processor integrated with the data reader for processing the symbol orientation data and the symbol movement data, and for determining an effectiveness of a scanning technique;

feedback means in communication with the processor for providing feedback indicating the effectiveness of the scanning technique.

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Sect 1*
31. (Original) The data reading system of claim 30 further comprising a weigh scale integrated with the data reader for obtaining a dynamic weight of the item during scanning.

Claim
32. (Original) The data reading system of claim 30 wherein the feedback means comprises a visual feedback display located on the housing.

33. (Original) The data reading system of claim 32 wherein the visual feedback display comprises a module removably mounted on the housing.

34. (Original) The data reading system of claim 30 further comprising a camera for monitoring motion of the item during scanning.

35. (Original) The data reading system of claim 30 wherein the feedback means comprises a printer for printing a scanning technique report.

36. (Original) The data reading system of claim 30 wherein the feedback means comprises a video monitor for displaying scanning technique data.

37. (Previously added) A method of optical scanning wherein an operator passes an item through a scan volume of a scanner while moving the item across a weigh scale integrated with the scanner, comprising the steps of

scanning an optical symbol on the item to obtain symbol data;

obtaining a dynamic weight of the item as the item is moved across the weigh scale;

calculating an average dynamic weight of a plurality of items scanned;

comparing the average dynamic weight of the plurality of items scanned to an average dynamic weight standard;

providing data regarding an extent of lifting to at least one of a training system and a monitoring system.

38. (Previously added) A method according to Claim 37 further comprising the step of monitoring scanning technique with the scanner to obtain scan technique data.

39. (Previously added) A method of optical scanning wherein an operator passes an item through the scan volume of a scanner while moving the item across a weigh scale integrated with the scanner, comprising the steps of

scanning an optical symbol on the item to obtain symbol data;

obtaining a dynamic weight of the item as the item is moved across the weigh scale;

comparing the dynamic weight value to a threshold value to make a decision whether the item was slid across the scanner or lifted across the scanner;

accumulating total quantities of items slid and items lifted for a plurality of items scanned;

providing data regarding the relative amounts of lifting and of sliding to at least one of a training system and a monitoring system.

40. (Previously added) A method according to Claim 39 further comprising the step of monitoring scanning technique with the scanner to obtain scan technique data.

41. (New) A method according to claim 1 wherein the step of providing feedback comprises displaying performance data to the operator indicating effectiveness of the operator's reading technique.

42. (New) A data reading system according to claim 32 wherein the visual feedback display comprises a visual readout in a graphical display.

43. (New) A data reading system according to claim 42 wherein the graphical display comprises a bar-graph.

44. (New) A data reading system according to claim 30 wherein the feedback means comprises a color readout.

45. (New) A data reading system according to claim 30 wherein the feedback means includes a changing color display visible to the operator during operation, wherein the color that is displayed depends upon the effectiveness of the operating technique.

46. (New) A data reading system, comprising
a housing;

a reading device disposed in the housing for detecting an aspect of an item being moved through a detection volume of the device;

means for monitoring operating technique of an operator moving items through the detection volume;

feedback means in communication with the monitoring means for providing feedback on the operating technique.

47. (New) A system according to claim 46 wherein the feedback means comprises a visual feedback display on the housing visible to the operator.

48. (New) A system according to claim 47 wherein the visual feedback display comprises a graphical display.

49. (New) A system according to claim 46 wherein the reading device is selected from the group consisting of: optical reader, bar code reader, CCD imaging data reader, LED reader, CMOS imaging reader, RFID reader, an EAS deactivation device.

50. (New) A method for providing feedback to an operator at an item handling station, comprising the steps of
monitoring an operating technique by which the operator handles items at the item handling station;
evaluating the operating technique;
providing feedback indicative of the operating technique.

51. (New) A method according to claim 50 further comprising
providing a visual display at the item handling station and displaying the feedback directly to the operator on the visual display.

52. (New) A method according to claim 50 wherein the step of evaluating the operating technique comprises determining an ergonomic performance of the operating technique and the step of providing feedback comprises indicating the ergonomic performance.

53. (New) A method according to claim 50 wherein the item handling station comprises a device selected from the group consisting of: optical reader, bar code reader, CCD imaging data reader, LED reader, CMOS imaging reader, RFID reader, EAS deactivation device.

Concise

54. (New) A system for data reading, comprising
a handheld data reader for obtaining identification
information from a label on an item;

monitoring means for monitoring operating performance as
the operator reads items with the handheld data reader;

feedback means in communication with the monitoring means
for providing feedback of the operating performance.

55. (New) A system according to claim 52 wherein the
feedback means comprises a visual feedback display on the data
reader visible to the operator.
